

Audio-Performance D2SP amplifier module

User Guide



Version 1.2
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Introduction:

The new amplifier module integrated in all high end Audio Performance products is based on a class D technology with all the benefit of a switching (PWM) amplifier. The amplifier was designed in order to eliminate all the well known disadvantages inherent to class D amplification.

The amazing result is a powerful and very reliable amplifier that integrates a high level of modern technology with efficiency for less than two kilograms.

What's new:

This new generation of amplifier sets the start of Audio Performance multi level products:

- Embedded high level DSP controllers
- Power Safe mode as a start in environmental efforts
- Efficient protection system to offer all-time safe operation
- Network capabilities (Linea Research BvNET monitoring and controlling network technology)
- Dedicated monitoring software (PodWare) for a all range of Audio Performance products.
- Network Solution with PodWare application
- Very easy-to-use graphical interface

Digital Signal Processing:

The internal digital signal processor provides digital signal processing and BvNET networked setup, monitoring and control.

The digital signal processing uses 96 kHz sampling rate upon 3rd generation "Sharc" processor. Burr-Brown converter assumes the analog-to-digital conversion and renowned Wolfson multi-bit the digital-to-analog conversion.

All algorithms implemented are borne of years of experiences in high quality professional digital audio.

Each Audio Performance products came with two proper factory settings that cannot be overwritten or modified. The incredible Podware application allows user to add personal settings that will be stored in the DSP. At any moment, user can bypass his own settings to compare or regain original factory settings.

Plus, Audio Performance provides special user setting files to achieve better performance in every situation. With the PodWare, just open the desired file, listen and mix it at your convenience.

Stand Alone Performance and manipulation:

The new D2SP comes with a all-in-one panel that offers all the controls needed. The figure 1 shows this panel and every I/O connection and settings' switches.

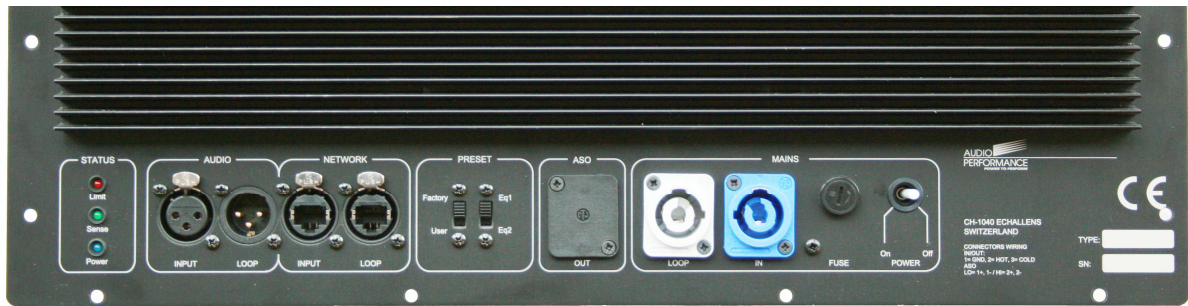


Figure 1: Amplifier Connection Panel

Referring to Figure 1, here are a list of the connectors, switches and LEDs function.

Audio:

The audio input is a 10 kOhm balanced input to a three-pin XLR female connector wired with the following convention:

Pin1: GND
 Pin2: Hot
 Pin3: Cold

Pin2 is hot relative to Pin3, resulting in a positive pressure wave when a positive signal is applied to Pin2. A single source can drive multiple cabinet with parallel input loop creating an unbuffered hardwired loop. Cascading n number of Self-Powered loudspeakers will produce a balanced input impedance of 10 kOhm divided by n.

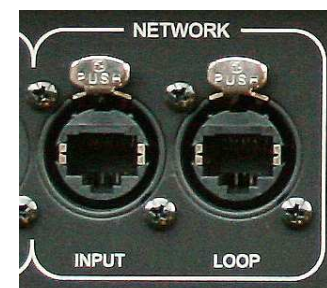


To avoid distortions from the source, make sure that the source equipment can drive the total load impedance presented by the parallel input circuit. For most source equipment it is safe to drive Circuits whose input impedance is not smaller than 10 times its output impedance. For example, cascading 10 Self-Powered loudspeakers produces an input impedance of 1 kOhm. The source equipment should have an output of 100 Ohm or less. This is also the case when connecting in parallel (loop out) Self-Powered Loudspeaker to any other Audio Performance Self-Powered Loudspeaker system.

Network:

The two standard "Ethercon" network connectors are fully compatible with standard RJ45 Ethernet Cat5 patch cables.

The input is designed to directly connect a PC via the Bvnet interface (optional) or to connect a cable coming from a existing network. The Loop connector is for continuing the network by connecting it to another networkable device.



With Cat5 cabling, Bvnet allows to attach up to 119 devices using a simple cabling scheme without requiring other network equipment such as Hub. The total span of the network may be at least 1km without repeaters. There is no maximum length for a single span within this limit.

Preset Switches:

As briefly described above, the D2SP amplifier module offers up to four preset possibilities.

Factory/User:

Those preset switches allows user to choose between two configurations. Factory means only factory settings, the ones provided with the speaker model. User means factory + user settings made with the PodWare application. The user settings added to those of the factory are internally and permanently stored into the DSP.

This way users have at disposal four complete settings with the permanent possibility to simply reset the original factory settings.



EQ1/EQ2:

EQ1 and EQ2 are two preset switches that allow to switch either between the factory settings or between the two user settings.

Each loudspeaker model have dedicated Factory EQ1 and EQ2 settings that can be found in table 1.

Model name	EQ1	EQ2	Special user file
SUB112amp	FR	FR -6dB	
SUB118amp	FR	FR -6dB	
SUB1amp	FR	FR -6dB	
SD-2amp	FR	HP	
RSamp	FR	HP	
SKamp	FR	HP	HP2
LM3amp	FR	HP	
SUB3amp	FR	FR -6dB	
SUB7amp	FR	FR -6dB	
SUB800amp	FR	FR -6dB	
RM15amp	FR	HP	
DLA6amp	FR	HP	
SUB6amp	FR	FR -6dB	
DLA12amp	FR	HP	HP2
DLM15amp	FR	FR -3dB	
MP8amp	FR	HP	
MP12amp	FR	HP	
MP15amp	FR	HP	
HC115amp	FR	FR -6dB	
HC112amp	FR	FR -6dB	

FR = Product Full frequency Range

FR -3dB = Product Full frequency Range but 3dB lower

FR -6dB = Product Full frequency Range but 6dB lower

HP = High Pass filtered response (for use with a subwoofer)

HP2 = High Pass Filtered response (for use with low-mid speaker)

Table 1: Factory EQ settings

Indicator LEDs:

The limit LED indicates when the limiter is active on both channels.

The signal LED shows the presence of an input audio signal.

The power LED shows if the amplifier is on or off.

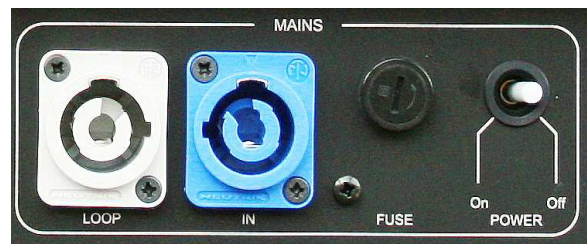


AC Power:

The amplifier is preset for 230/115 V AC power supply operation. The voltage selection is automatic.

The module uses Neutrik Powercon inlet for "Mains" supply and "Loop", respectively blue and white on the panel.

There is one main switch for powering up and shutting down the amplifier. With the technology inside, users can use the power save mode to shut down the amplifier after a selectable amount of time. The powering up will be done in less than a millisecond as soon as an audio input signal will be detected.



Changing the fuse is easy with the unscrewable housing.

ASO Output:

The ASO output is there for supplying slave loudspeaker. Note that not all Audio Performance speakers have the ASO output.

ATTENTION-WARNING

THE TOTAL LOAD ON ONE AMPLIFIER MUST BE KEPT UPON 2 OHMS.



Working with PodWare:

As written above, the new A.P. products range are all networkable and can easily be monitored with the PodWare application. You can find more information about PodWare on our website or by ordering the PodWare manual directly from the factory.

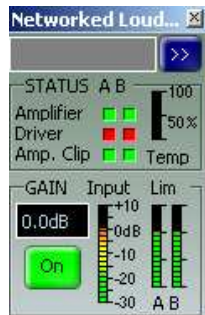


Figure 2: Self-powered loudspeaker Monlcon

Figure 2 shows what is called a Monlcon. It is a quick look monitoring interface that gives information about the behavior of the unit as well as a quick mute button.

In case of working with numerous self-powered loudspeakers, and of course a set network, every speaker will have his own Monlcon in the main PodWare interface (Figure 3).

Each device will be directly identified by model name and can be renamed to suit your needs.

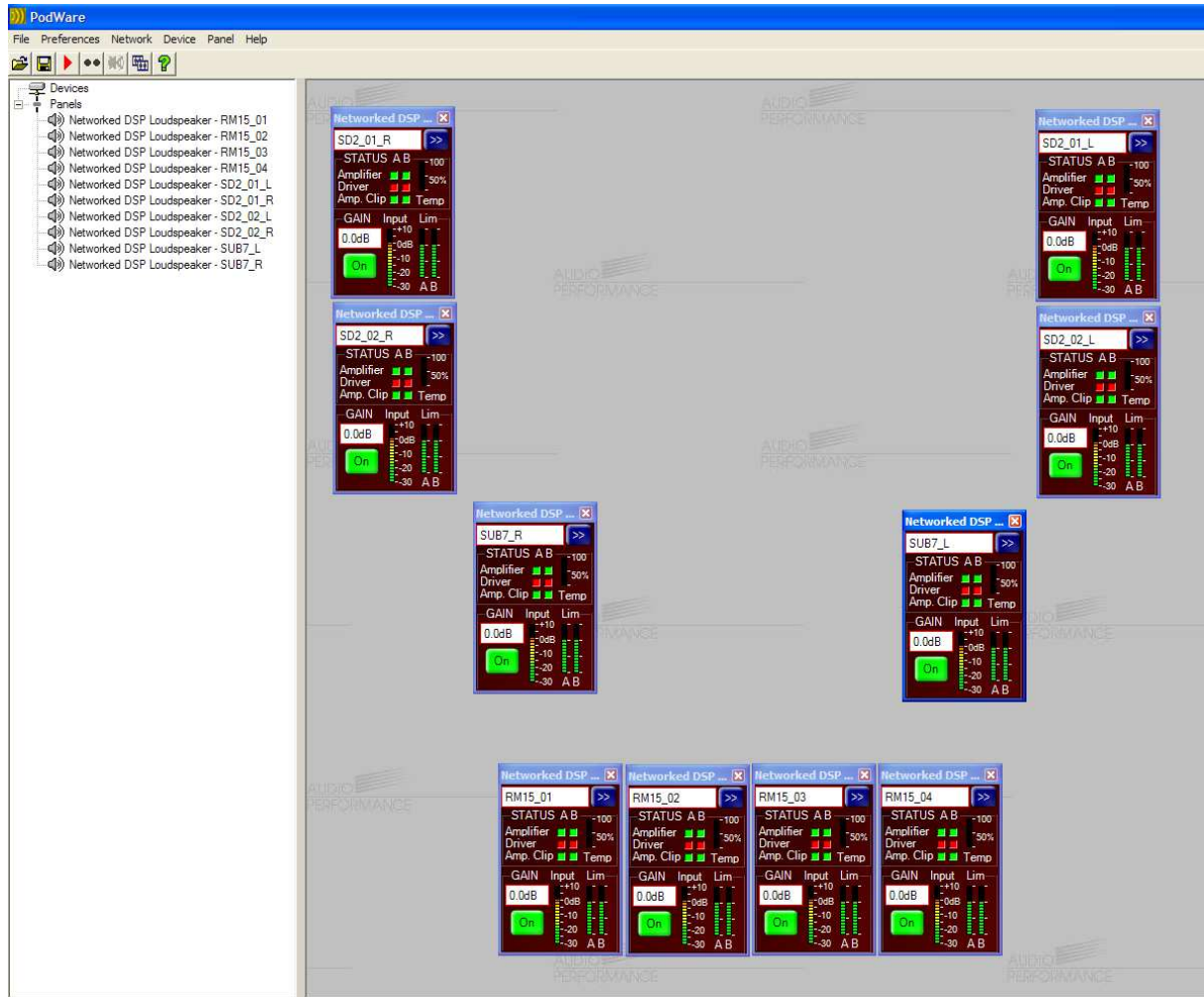



Figure 3: Complete Loudspeaker configuration MonIcons

By clicking on the , a new control panel will appear and will offer you a much complete monitoring system and loudspeaker configuration tool (Figure 4).

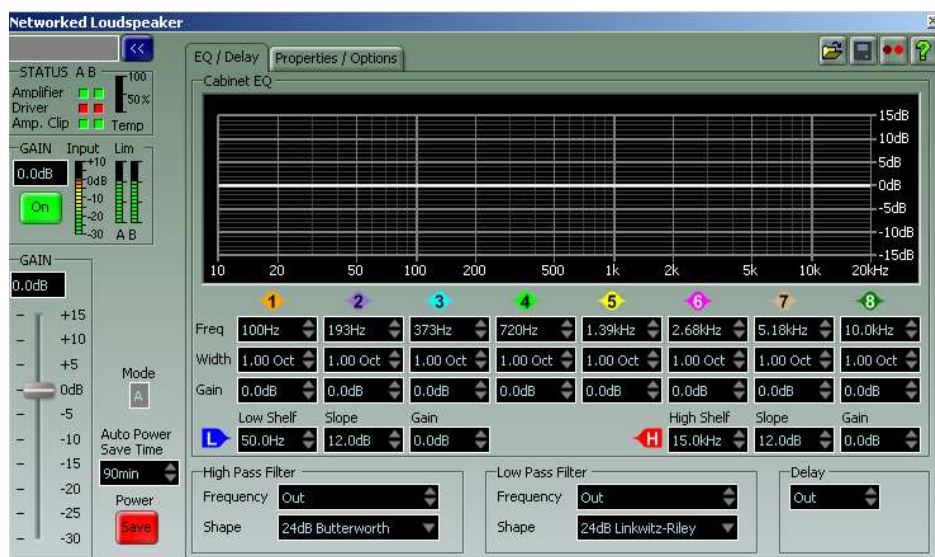


Figure 4: Loudspeaker Control Panel

Figure 4 shows the entire equalization parameters, high-pass and low-pass filter possibilities, delay line, loudspeaker gain control, power save mode button and control as well as the loudspeaker mode in use.

MonIcon:

After clicking the double arrows, you will still be able to see the MonIcon at the upper left.

The MonIcon displays the status of both amplifier's channels of the amplifier, the status of the drivers (real time impedance measurements), the clipping of each channel, the protection in temperature, the output gain, the input gain and the activation of the limiter. It also offers the quick mute button to allow fast operations.

Output and General controls:

The networked Loudspeaker interface allows users to adjust the output gain of the amplifier (channel A and B simultaneously).

The Mode display will inform users if the user settings is bypassed or not.

USER mode:

Mode A does correspond to the factory settings EQ1 + user settings.

Mode B does correspond to the factory settings EQ2 + user settings.

FACTORY mode:

"USER DSP disabled - see switch on cabinet" flashes on the Mode control panel

Only the factory settings EQ1 or EQ2 can be selected. It means that none of the changes in filters and equalization would be heard.

Auto Power Save Time:

The networked loudspeaker panel offers a environmental power management system. In the power save mode, user can decide the length of the non activity amount of time that will led to an automatic amplifier power supply shutdown. The amplifier will restart in less than 1ms as soon as an audio input signal is detected.

Equalization:

Up to eight parametric EQs plus both Low Shelf and High shelf filters can be applied to the signal received at the speakers. Every parametric filters can be set with the center frequency, the Q factor or octave ratio and the gain. Those parameters could be either changed by directly entering the value in the corresponding display or by clicking on the graphical display and use the drag-and-drop functionality.

For some precise purposes, high-pass and low-pass filters could be used. For better results, please refer to the factory recommendation about high-passing a speaker. Some speakers user files (.dsa) could be download on the Audio Performance website or can be asked directly to the factory.

Properties/Options:

By clicking on the Properties/Options tab, you will enter a new panel (). This interface allows user to visualize the speaker model name, to set a Loudspeaker name and to give to his settings a name. All this information will be kept in memory as soon as the file will be saved.

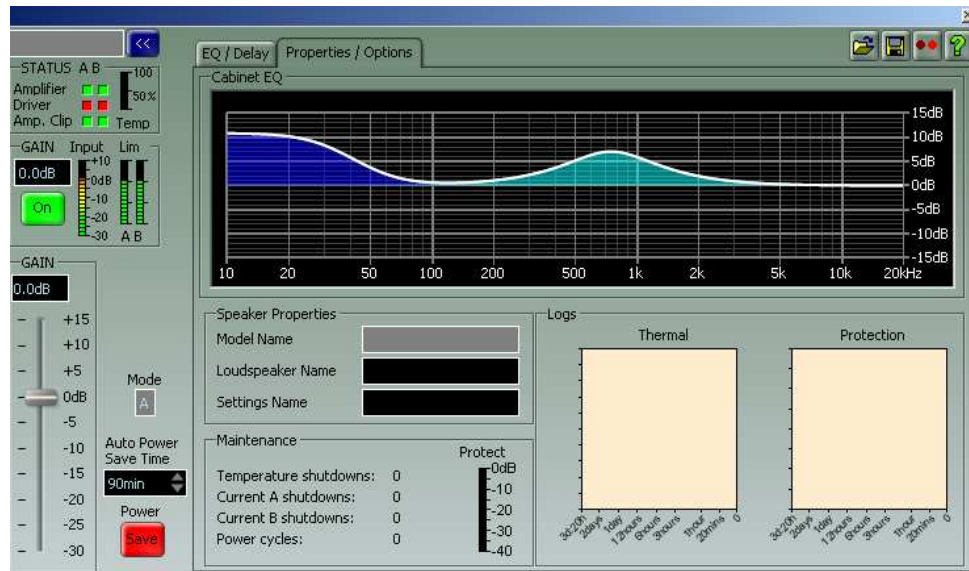


Figure 5: Properties/Options panel

In this interface, there is also display for maintenance. User can see on two graphics the thermal condition of the amplifier as well as the thermal protection cycle for the past three days and twenty hours. All this information are stocked in the DSP and will be recalled immediately when the loudspeakers is networked or accessed directly. Users always have the display of the active equalization curve.

There is also a quick look maintenance display where the number of temperature shutdowns, Current channel A and B shutdowns and power cycles can be seen. This way users have a good way to estimate the performance of the speaker in its surroundings.

Save/Recall:

In the upper right corner of the panel, users can save an recall .dse files. It will save all the user preferences and settings.

Wink Button:

The wink button will make the two amplifier LEDs to wink for almost three seconds. It is a way, in complex installation, to quickly identify the speaker that is currently controlled.

Help Button:

The help button will open help document in a window of your internet browser. No internet connection is needed.

Audio Performance Networked Application:

With the new range of Audio Performance self-powered loudspeakers and the AP214D and AP216D digital controllers, there is no more limit to control and configure your entire sound system from the wedges to the FOH system.

More information about the P214D and P216D can be found at www.audio-performance.com or directly at the factory.